

CONTENTS

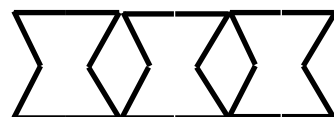
PAGES	EXAMPLES	STRATEGIES																																		
III - V	Strategies																																			
VI, VII	Mini LUK Self Checking System	How to use the LUK System.																																		
1, 2, 3, 4, 5, 6,	$3 + 1 =$ $3 + 3 + 1 =$ $3 + 3 + 3 + 3 =$ $3 + 3 + 3 - 1 =$	Use repeated addition: $3 + 3 + 3 + 1 = 10$ $\underline{123} \quad \underline{456} \quad \underline{789} \quad \underline{10}$ Skip count in 3s and add on 1 $3 + 3 + 3 + 1 = 10$ $\underline{3} \quad \underline{6} \quad \underline{9} \quad \underline{10}$																																		
7, 8, 9, 10, 11, 12, 13,	$3 \times 3 =$ $2 \times 3 + 1 =$ $\boxed{3 + 3 + 3}$ $\boxed{}$ $2 \times 3 + 1 =$ $3 \times 3 + 2 =$ $\boxed{3 + 3 + 1}$ $\boxed{}$	Rewrite the multiplication facts as repeated addition or skip count in 3s. Use any strategy described on pages III to IV.																																		
14, 15, 16, 17, 18, 20,	$6 \times 3 =$ $3 \times 3 =$ $9 \times 3 =$ $7 \times 3 =$ $5 \times 3 =$ $8 \times 3 =$	Count in multiples or add on repeatedly.																																		
21, 22, 23, 24, 25, 26,	<table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>1</td><td>11</td><td>2</td><td>22</td></tr> <tr><td></td><td>$\underline{x3}$</td><td></td><td>$\underline{x3}$</td></tr> <tr><td></td><td>—</td><td></td><td>—</td></tr> </table> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>3</td><td>33</td><td>4</td><td>32</td></tr> <tr><td></td><td>$\underline{x3}$</td><td></td><td>$\underline{x3}$</td></tr> <tr><td></td><td>—</td><td></td><td>—</td></tr> </table> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td colspan="2">Answers LUK code</td></tr> <tr><td>99</td><td>2</td></tr> <tr><td>126</td><td>12</td></tr> <tr><td>39</td><td>1</td></tr> </table>	1	11	2	22		$\underline{x3}$		$\underline{x3}$		—		—	3	33	4	32		$\underline{x3}$		$\underline{x3}$		—		—	Answers LUK code		99	2	126	12	39	1	These multiplication problems don't need regrouping. Use strategies from page IV. You may use a calculator.		
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27, 28, 29, 30, 31,	<table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>1</td><td>45</td><td>2</td><td>34</td></tr> <tr><td></td><td>$\underline{x3}$</td><td></td><td>$\underline{x3}$</td></tr> <tr><td></td><td>—</td><td></td><td>—</td></tr> </table> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>3</td><td>85</td><td>4</td><td>84</td></tr> <tr><td></td><td>$\underline{x3}$</td><td></td><td>$\underline{x3}$</td></tr> <tr><td></td><td>—</td><td></td><td>—</td></tr> </table> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td colspan="2">Answers LUK code</td></tr> <tr><td>252</td><td>11</td></tr> <tr><td>72</td><td>2</td></tr> <tr><td>105</td><td>9</td></tr> <tr><td>225</td><td>1</td></tr> </table>	1	45	2	34		$\underline{x3}$		$\underline{x3}$		—		—	3	85	4	84		$\underline{x3}$		$\underline{x3}$		—		—	Answers LUK code		252	11	72	2	105	9	225	1	These multiplication problems do need regrouping. Use strategies from page V. You may use a calculator.
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32, 33,	$24 \div 3 =$ $24 \div 3 =$	Count in multiples until you reach the dividend, then see how many multiples you have counted, that ordinal number is the answer.																																		
34, 35	$3 \overline{)21}$ $3 \overline{)27}$																																			
36, 37,	$\frac{6}{3} =$ $\frac{27}{3} =$ $\frac{15}{3} =$	Fractions are divisions. Divide the top number (numerator) by the bottom number (denominator). Divide the whole number by the bottom number (denominator).																																		
38, 39,	$\frac{1}{3}$ of 15 = $\frac{1}{3}$ of 9 =																																			
40	LUK Progress Chart	List of LUK patterns, page by page.																																		
41	Number line templates.	Printable templates and exemplars.																																		



1	$3 \times 3 =$ $3 + 3 + 3$	
2	$2 \times 3 + 1 =$ $3 + 3 + 1$	
3	$4 \times 3 =$ $3 + 3 + 3 + 3$	
4	$3 \times 3 + 1 =$ $3 + 3 + 3 + 1$	
5	$2 \times 3 =$ $3 + 3$	
6	$2 \times 3 + 2 =$ $3 + 3 + 2$	

7	$1 \times 3 + 1 =$ $3 + 1$	
8	$0 \times 3 + 1 =$ $0 + 1$	
9	$3 \times 3 + 2 =$ $3 + 3 + 3 + 2$	
10	$1 \times 3 =$ 3	
11	$1 \times 3 + 2 =$ $3 + 2$	
12	$0 \times 3 + 2 =$ $0 + 2$	

Hint: You may simplify the multiplication by using repeated addition.



3 6

Write the multiples on the number line.

1	$3 \times 3 =$	
2	$5 \times 3 =$	
3	$7 \times 3 =$	
4	$1 \times 3 =$	
5	$6 \times 3 =$	
6	$4 \times 3 =$	
7	$2 \times 3 =$	
8	$9 \times 3 =$	
9	$8 \times 3 =$	
10	$11 \times 3 =$	
11	$12 \times 3 =$	
12	$10 \times 3 =$	

Answers | LUK code

3	2
6	8
9	1
12	6
15	5
18	3
21	9
24	10
27	11
30	12
33	7
36	4

Hint: It may be easier to write out the multiples and then use skip counting.



Write the multiples on the number line.

1	$\begin{array}{r} 23 \\ \times 3 \\ \hline \hline \end{array}$	2	$\begin{array}{r} 42 \\ \times 3 \\ \hline \hline \end{array}$
3	$\begin{array}{r} 33 \\ \times 3 \\ \hline \hline \end{array}$	4	$\begin{array}{r} 43 \\ \times 3 \\ \hline \hline \end{array}$
5	$\begin{array}{r} 53 \\ \times 3 \\ \hline \hline \end{array}$	6	$\begin{array}{r} 62 \\ \times 3 \\ \hline \hline \end{array}$
7	$\begin{array}{r} 41 \\ \times 3 \\ \hline \hline \end{array}$	8	$\begin{array}{r} 32 \\ \times 3 \\ \hline \hline \end{array}$
9	$\begin{array}{r} 13 \\ \times 3 \\ \hline \hline \end{array}$	10	$\begin{array}{r} 22 \\ \times 3 \\ \hline \hline \end{array}$
11	$\begin{array}{r} 52 \\ \times 3 \\ \hline \hline \end{array}$	12	$\begin{array}{r} 63 \\ \times 3 \\ \hline \hline \end{array}$

Answers | LUK code

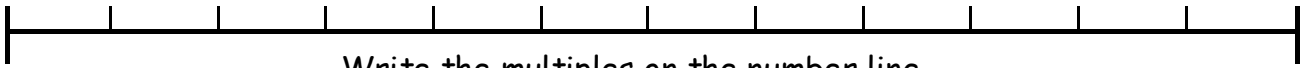
186	10
189	4
69	5
123	6
126	9
99	2
96	3
66	11
129	12
39	7
159	8
156	1

I can do that!



Hint: Skip count using multiples of 3.





Write the multiples on the number line.

1 $3 \overline{) 21}$	2 $3 \overline{) 33}$
3 $3 \overline{) 27}$	4 $3 \overline{) 24}$
5 $3 \overline{) 9}$	6 $3 \overline{) 36}$
7 $3 \overline{) 6}$	8 $3 \overline{) 15}$
9 $3 \overline{) 30}$	10 $3 \overline{) 3}$
11 $3 \overline{) 12}$	12 $3 \overline{) 18}$

1 $3 \overline{) 36}$	2 $3 \overline{) 24}$
3 $3 \overline{) 30}$	4 $3 \overline{) 33}$
5 $3 \overline{) 12}$	6 $3 \overline{) 21}$
7 $3 \overline{) 15}$	8 $3 \overline{) 6}$
9 $3 \overline{) 27}$	10 $3 \overline{) 18}$
11 $3 \overline{) 9}$	12 $3 \overline{) 3}$



See page V
for strategies.



Write the multiples on the number line.

$\frac{1}{3}$ of 15 =	$\frac{1}{3}$ of 3 =
$\frac{1}{3}$ of 9 =	$\frac{1}{3}$ of 18 =
$\frac{1}{3}$ of 30 =	$\frac{1}{3}$ of 6 =
$\frac{1}{3}$ of 36 =	$\frac{1}{3}$ of 21 =
$\frac{1}{3}$ of 12 =	$\frac{1}{3}$ of 33 =
$\frac{1}{3}$ of 27 =	$\frac{1}{3}$ of 24 =

$\frac{1}{3}$ of 33 =	$\frac{1}{3}$ of 9 =
$\frac{1}{3}$ of 24 =	$\frac{1}{3}$ of 36 =
$\frac{1}{3}$ of 6 =	$\frac{1}{3}$ of 12 =
$\frac{1}{3}$ of 18 =	$\frac{1}{3}$ of 27 =
$\frac{1}{3}$ of 21 =	$\frac{1}{3}$ of 15 =
$\frac{1}{3}$ of 3 =	$\frac{1}{3}$ of 30 =



It is a division.
See page V
for strategies.

